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DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES MANAGEMENT

HAND WASHING AS A PRACTICE AMONG HEALTHCARE WORKERS AT THE
KANESHIE POLYCLINIC, ACCRA

Dissertation submitted to the Department of Environmental and Natural Resources Management
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fulfillment of the requirements for the award of Master of Science degree in Environmental
Health and Sanitation

BY

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DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this University or elsewhere.

Candidate's Signature.....Date.....

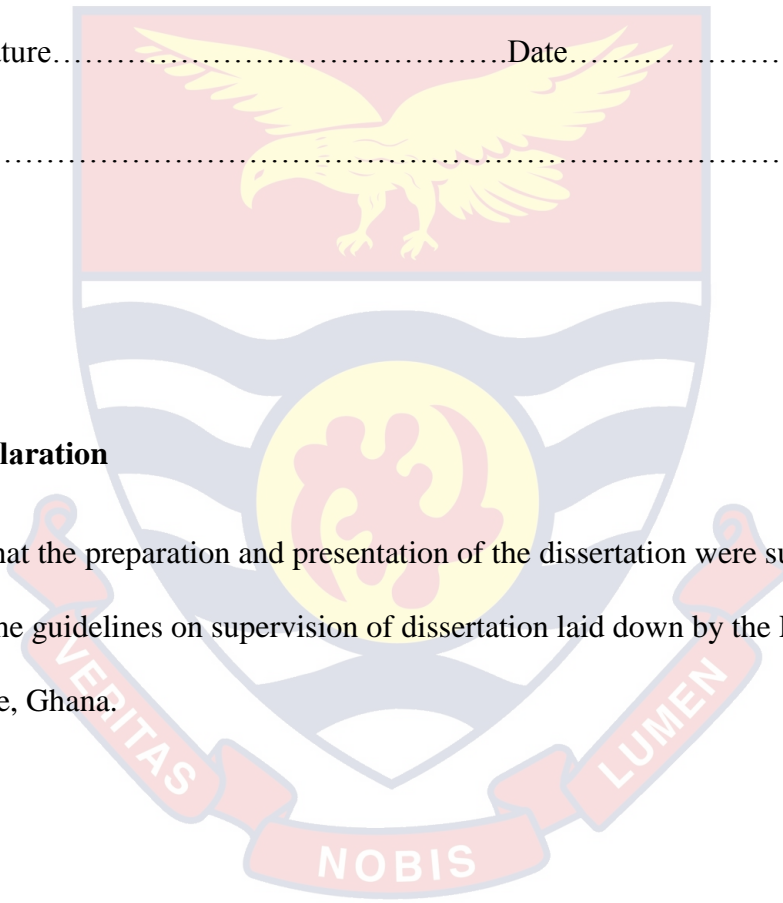
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Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the Presbyterian University College, Ghana.

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ABSTRACT

Preventing and controlling of infections in the delivery of quality healthcare is very necessary as they lead to the protection of patients, the health worker as well as the general public. However the rate of hand washing with soap and water appears to be unacceptably low amongst health workers. The study examined hand washing as a practice among healthcare workers at the Kaneshie Polyclinic of the Greater Accra Region of Ghana. The study was a descriptive survey and the views of 100 respondents were sought through the administering of questionnaire. Primary and secondary sources of data collection method were used and data collected from the field was processed and analysed through the use of Statistical Package for Social Sciences (SPSS) version 16.0. It was evident from the study that 64% of the respondents interviewed had more knowledge about hand hygiene. Amid Covid-19, 56% of the respondents believe that wearing protective gloves instead of washing hands is the most effective step for controlling any infections. Fifty six percent of the participants were of the opinion that the hands should be washed first thing in the morning and 55% of the respondents were quite divided with regards to washing of hands with soap under running water. 88% of the respondents strictly followed the WHO's guidelines on hand hygiene due to the training and awareness exercise given them by polyclinic managers. However, the study concludes that improving and providing facilities and resources for practicing hand hygiene may play a critical role in increasing the knowledge, attitudes and practices of hand washing among healthcare workers at the Kaneshie Polyclinic and also regular and intensive training and awareness exercise by the polyclinic managers may be a key factor for hand washing compliance. It is therefore recommended that Polyclinic managers through the Ghana health service should provide health workers the needed resources required for strict compliance to the WHO's guidelines for hand hygiene

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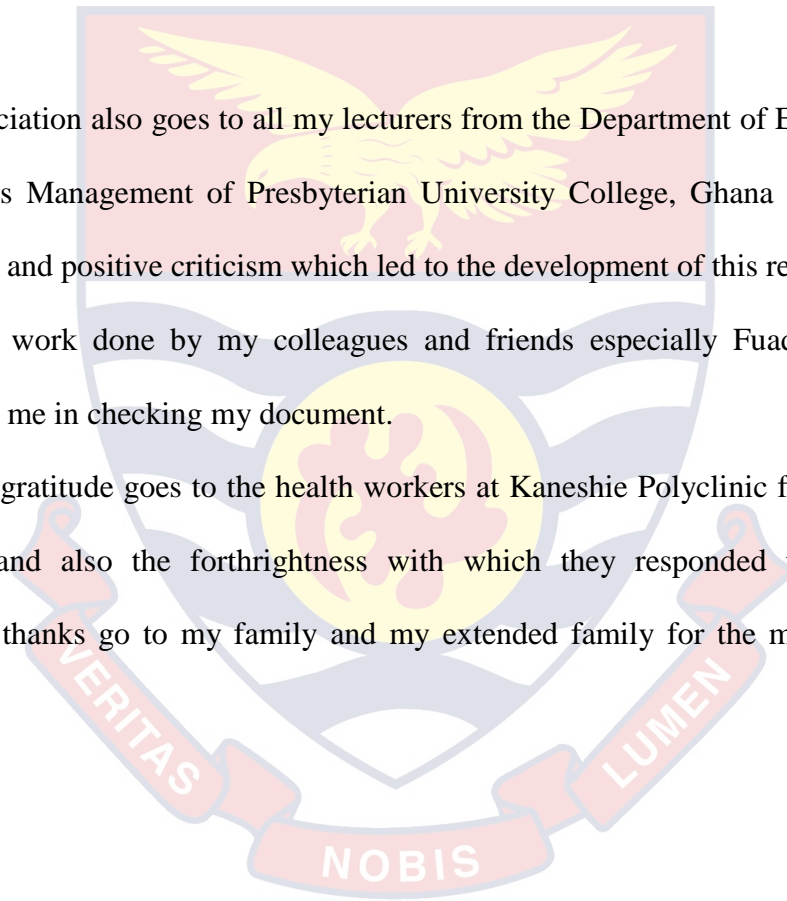
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DEDICATION

To my family.



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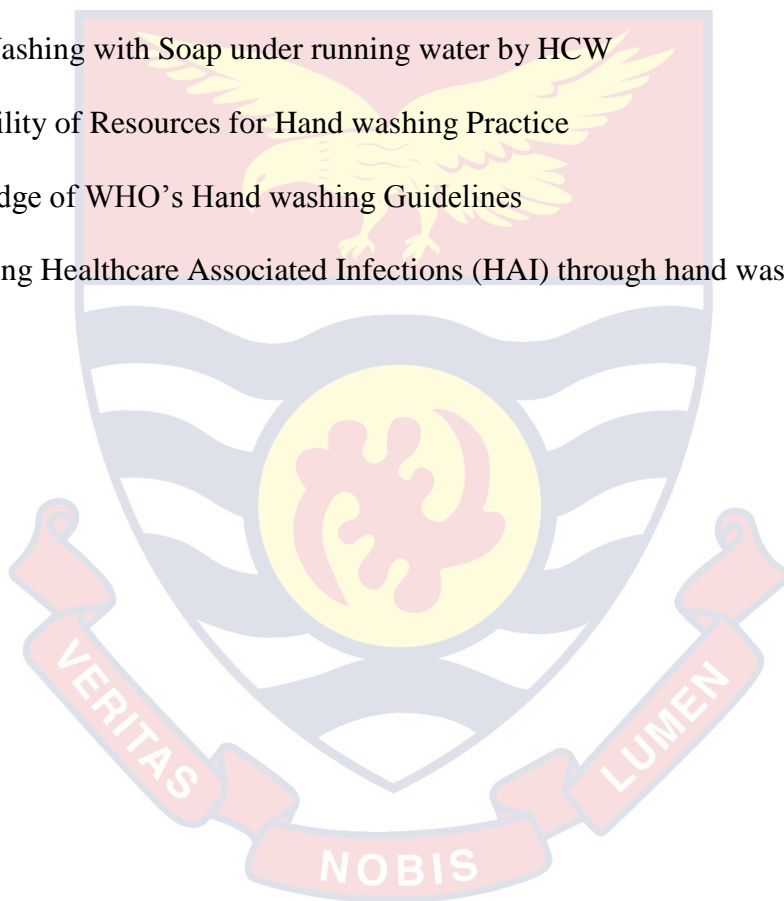
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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Hand washing is the rubbing together of all surfaces and crevices of the hands using a soap or chemical and water (Jemal, 2018). Hand washing should be performed after arriving at work, before leaving work, between client contacts, after removing gloves, when hands are visibly soiled, before eating, after excretion of body wastes including urination and defecation, after contact with body fluids, before and after performing invasive procedures, and after handling contaminated equipment (Jemal, 2018). The exact duration of time required for hand washing depends on the circumstances. A washing time of 10 to 15 seconds is recommended to remove transient flora from the hands. High risk areas, such as nurseries, usually require about a 2-minute hand wash. Soiled hands usually require more time (Singh, Kumar, Sundaram, Kanijilal & Nair, 2012).

Centers for Disease Control and Prevention (CDC) in 2011, reported that hospital patients acquire an estimated 722,000 infections each year in the United States, which is about 1 infection for every 25 patients (CDC, 2016). The most vulnerable group to these HAIs is hospitalized infants and children. Young infants and children are susceptible to many infections because they have not yet fully developed their immune systems. Also, their behavioral characteristics such as incontinence, inadequate hygiene, frequent mouthing of hands, objects, and drooling facilitate the spread of infection (Moore, 2001). Patients can be exposed to a variety of microorganisms (bacteria, viruses, fungi and, parasites) during hospitalization. Some of the most common sources of infectious agents that could potentially be a source of HAI's is the

patient itself, contaminated medical equipment, surrounding hospital environment, healthcare personnel, etc. (Collins, 2008).

Nosocomial infections due to poor hand hygiene are a major cause of increasing morbidity, mortality, and health care costs among hospitalized patients worldwide. The high prevalence of these infections, as high as 19%, in developing countries poses a challenge to health care providers (Angel, 2015). Health care workers' hands are the most usual type of vehicle for transmission of health care associated infections. Pathogenic microorganisms can stay for 2-60 minutes on health care workers' hands (Anderson, Warren & Perez, 2008). Hand washing is the most simplest and effective measure to prevent infections. However, about 50% of health care associated infections occur due to hand of health care providers (HCPs) (World Alliance for Patient Safety, 2011). Prevention of healthcare infections consists of two aspects, the healthcare workers knowledge and practice of infection prevention and the way infection prevention is handled within the system.

The World Health Organization (WHO) estimates that over 1.4 million people suffer from nosocomial infections at any one time, with an up to 20 times higher prevalence in low and middle income countries. Industrialized nations report healthcare-associated infections in 5-10% of patients; whereas, in developing countries, healthcare-associated infections can exceed 25% (Allegranzi *et al.*, 2007). Healthcare-associated infections cost thousands of lives each year, yet most nosocomial infections can be prevented with available and inexpensive infection control measures such as hand hygiene and wearing of gloves. Globally, standard precautions of infection control are considered an effective means of protecting healthcare workers, patients and the public (Wasswa, Nalwadda, Buregyeya, Gitta, Anguzu, & Nuwaha, 2015).

Hospital acquired infections complicate 7-10% of hospital admissions. These infections according to Masadeh and Jaran (2009) result from the transmission of microorganisms from the hands of health workers in health institutions. The spread of these health care associated infections can be controlled if health workers wash their hands at appropriate times with soap and water (Sepehri, Talebizadeh, Mirzadeh, Shekari & Sepehri, 2009). The Guidelines for Hand washing and Hospital Environmental Control from the Center for Disease Control and Prevention (CDC); the Hospital Infection Control Practices Advisory Committee and the Association for Professionals in Infection Control and Epidemiology (APIC) have each highlighted specific indications for hand washing compliance (CDC, 2010).

In Ghana, the Ministry of Health has put in place a policy to help in infection prevention and control (Kondor, 2018). This is the National Policy and Guidelines for Infection Prevention and Control in Health Care Settings in Ghana (IPC Policy). The IPC Policy is meant to give direction to healthcare personnel and clients for the prevention and control of infection within health care settings in order to ensure patients safety and that of health workers. The policy is based on research findings and recommendations from experts as well as professional judgement indicating the need for strategies to handle infection. Standard precautions, listed in the policy guidelines are based on the principle that all blood, body fluids, secretions, excretions, non-intact skin and mucous membranes may contain transmissible infectious agents. These standard precautions include hand hygiene, the use of appropriate personal protective equipment, the use of aseptic technique to reduce exposure to microorganisms and management of sharps, spills, linen, and waste to maintain a safe environment (Kondor, 2018).

1.2 Statement of the Problem

The World Health Organization (2010) estimates that in low and middle income countries, approximately 90% of healthcare workers are not compliant with hand hygiene guidelines, with an approximate 20% surgical site infections occurring post caesarean deliveries (Hayeh & Esena, 2013). Health-care associated infections continue to pose a serious threat of increasing mortality and morbidity among hospitalized patients not only at the Kaneshie Polyclinic but the world at large and the World Health Organization reports that at anytime, over 1.4 million people worldwide suffer from infections acquired in health-care settings (WHO, 2005).

Many factors are reported in most health facilities including the Kaneshie Polyclinic to be accountable for the poor knowledge, attitudes and compliance to infection prevention measures. Some studies have reported poor knowledge and understanding of the principles of Infections Prevention and Control (IPC), forgetfulness, heavy workload, inadequate staff strength, non-availability of resources, skin irritation, general poor attitude and low commitment of staff and managers towards IPC (Hayeh & Esena, 2013; Ravichandran, Leela, Ravinder, & Kavitha, 2019) (Kingston *et al.*, 2018). Some studies have also shown that poor organization of the work environment coupled with poor enforcement of standards result in lack of adherence to the use of personal protective equipment (Carneiro, Neves, Custódia, Medeiros, & Munari, 2011).

1.3 Purpose of the Study

The transmission of microorganisms from the hands of hospital personnel is a huge source of infections and these can be readily prevented by staff conforming with laid down hand washing protocols such as the World Health Organization's (WHO) five moments of hand hygiene. The

study therefore intends to ensure strict adherence with best practices for hand hygiene among health care workers not only at the Kaneshie Polyclinic but in any health facility as a whole.

1.4 Research Questions

1. What is the practice of hand washing among healthcare workers?
2. What are the resources for practising hand washing?
3. What are the factors that contribute to hand washing compliance?

1.5 Research Objectives

This study was carried with the main aim of examining the hand washing practices among healthcare workers in the Kaneshie Polyclinic of the Greater Accra Region of Ghana.

Specific Objectives

1. To examine the practices of hand washing among healthcare workers.
2. To analyse the resources needed to practice hand hygiene.
3. To examine the factors that contributes to hand washing compliance among health workers.

1.6 Significance of the study

The purpose of the study is to find out if hand hygiene is being done by health workers in the Kaneshie Polyclinic according to the World Health Organization (WHO) guidelines on hand hygiene. Thus the study examines the degree of conformance with hand hygiene and the use of gloves by various categories of Health Care Workers (HCWs) at the Kaneshie Polyclinic. It is

also hoped that the study will benefit all health care workers in the country and beyond through making recommendations aimed at improving hand hygiene compliance.

1.7 Delimitation of the Study

The study was limited in geography and scope. Geographically, a study of this nature should have been expanded to cover all health care workers within in the Greater Accra Region of Ghana but it was limited to only some health care workers in the Kaneshie Polyclinic in the Accra Metropolitan Assembly. The study focused on health care workers in the Kaneshie Polyclinic. Health care workers or respondents here include; Nurses, Doctors and Administrators.

1.8 Limitations of the Study

Concerning the generalisation of the findings of the study, the fact remains that the relatively defined sample is not large enough to permit the generalisation of the results to all health care workers in Ghana. As such, the findings of the study was generalised to only the population of the study.

1.9 Organization of the study

The study is organized in five main chapters. Chapter One focuses on the general introduction which includes the background of the study, statement of the problem, objectives, relevance of the study and the organization of the study. Chapter Two reviews and discusses literature on the study done by other researchers in this field in a logical organization. It also discusses the various approaches that have been used on the subject. Chapter Three outlines the

research methodology employed. Chapter Four presents the findings of the study and give an in-depth analysis and discussion of the findings. Finally, Chapter Five provides a summary of the research findings, draw conclusions and make recommendations.



CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter gives an overview of hand hygiene practices and challenges among health care Workers. It also shows how variety of sources was used in searching for literature related to the work. The sources used were direct internet searches, Pub Med, different search engines, publications and relevant books.

2.2 Hand Hygiene among Health Workers

Hand hygiene is the easiest means for preventing the spread of pathogens with huge antimicrobial resistance potential and reducing rates of healthcare-associated infections. However, healthcare workers conformance with optimal practices has been observed to be low in most settings (Allegranzi, Sax, Bengaly, Richet, Minta & Chraiti, 2010). These infections acquired in the hospital are a major cause of morbidity as well as mortality. Some studies have also shown that hand washing practices are persistently poor and sub optimal. It has also been challenging to show that hand washing practices can be easily improved and this has been attributed to difficulties associated with behavior modification among hospital staff (Olaifa, Govender & Ross, 2018).

Adherence, with best practices for hand hygiene remains low but factors responsible for non-adherence have been identified and corrective actions proposed in some studies. The present guidelines propose the use of alcohol-based hand rub formulations where feasible in the absence of running water as the new standard of care, thus needing a system change in most hospitals (Pittet *et al.*, 2016).

For centuries, hand washing with soap and water has been considered a measure of personal hygiene but the link between hand washing and the spread of disease was only been established in the last 200 years (Allegranzi *et al.*, 2010). According to Pittet, *et al.*, (2016), in the mid-1800s, studies by Ignaz Semmelweis in Vienna and Oliver Wendell Holmes in Boston established that healthcare associated infections were transmitted via the hands of HCWs. In the community, hand hygiene has been acknowledged as an important measure to prevent and control infectious diseases and can significantly reduce the burden of diseases, in particular among children in developing countries (Allegranzi *et al.*, 2010). The spread of infections in developing countries remains a serious problem, especially in high-risk settings such as health care facilities due to lack of awareness in health care workers and compounded by “omo syndrome” (a belief that they are super clean and sterile) (Palmer *et al.*, 2014).

Hands play a major role in the transmission of infection in healthcare setting and the importance of hand hygiene in the control of infection cannot be overemphasized (Hassan, 2017). Appropriate hand hygiene can minimize micro-organisms acquired on the hands during daily duties (WHO, 2010). Hand hygiene, defined as the act of washing one’s hands with soap and water, or disinfecting them with an antiseptic agent, has been recognized as the single most effective and cost-effective means of preventing hospital acquired infection, as well as an effective means of preventing illness in the community that may lead to hospitalization (Allegranzi *et al.*, 2010). Despite this, many studies have documented that compliance with hand hygiene recommendations in healthcare settings is consistently less than 50% (Pettit *et al.*, 2012). Intensive education programs have been associated with modest improvements in hand hygiene and dramatic reductions in rates of hospital-acquired infections (Allegranzi *et al.*, 2010). However, few programs have documented continuing success.

Collins & Hampton (2011) advised that hand hygiene should be considered before invasive procedures, after contact with contaminated devices or materials, and with high risk, infectious patients. Moreover, Kampf & Loffler (2010) claim that hand hygiene should be advocated before beginning work, at the end of work, and after visiting the rest room that is toilet. However, Canham (2011) argues that hand hygiene requirements depend on the type of procedure, the degree of contamination and the persistence of antimicrobial action on the skin. Even when nurses spend a longer time on hand hygiene, their technique is often poor compared to other HCWs in terms of leaving large areas unwashed effectively, i.e. wrists, thumbs, nail beds and between fingers.

Compliance with hand hygiene protocols among healthcare workers in the hospital is recognized as one of the most important means of preventing hospital acquired infections (Palmer et al., 2014). Nosocomial bloodstream infections are in part caused by horizontal transmission of commensals or pathogens due to inappropriate hygiene practices (Kampf and Kramer, 2004). Various sources have reported poor compliance among healthcare professionals (Grol and Grimshaw, 2003; Pittet *et al.*, 2000), Therefore, the most effective strategy to decrease nosocomial bloodstream infections is to improve hand hygiene practices (Kampf and Kramer, 2004; Lam *et al.*, 2004; Yildirim *et al.*, 2012).

Adequate hand hygiene (HH) is regarded as the most effective single measure to prevent healthcare-associated infections (Pittet *et al.*, 2002), and despite several recommendations and guidelines on adequate HH being available (Pittet *et al.*, 2009 and WHO, 2009), observed compliance rates (CRs) in medical staff still remain low (Gould *et al.*, 2007, Erasmus et al., 2010, Scheithauer *et al.*, 2009 and Scheithauer *et al.*, 2010) and have been regarded by public health authorities as unacceptably poor (Day, 2007 and WHO, 2009). Worrisomely, most

investigations found even lower compliance in physicians than in nurses. Furthermore, this difference in CRs has been recently confirmed for medical students compared to nursing students van de Mortel *et al.*, (2011).

The importance of hand hygiene was recognised as early as 1840s, by Dr. Oliver Wendell Holmes to prevent childbed fever and in the late 1840's, by Dr. Ignaz Semmelweis to reduce maternal mortality in a Vienna hospital, however, adherence still remains low (40% or below) in most of the health care institutions (Trampuz & Widmer, 2014). Improper hand hygiene by healthcare workers (HCWs) is responsible for about 40% of nosocomial infections (Inweregbu, Dave & Pittard, 2005). Lack of knowledge and lack of recognition of hand hygiene opportunities during patient care are mainly responsible for poor hand hygiene among HCWs. Although many countries have guidelines regarding hand hygiene for healthcare settings, overall compliance among HCWs remains poor (Suchitra & Lakshmidēvi, 2016) despite hand hygiene being regarded as one of the most important elements of infection control activities (Mathur, 2011). WHO, in 2005 issued guidelines regarding specific steps and procedures to be followed during hand washing (World Health Organization (WHO), 2010).

2.2.1 The Hands as Vectors of Microorganisms

The microbial population of the skin is divided into resident flora and transient flora (Noble & Somerville, 2010). The resident flora is associated with the deeper layers of the skin such as the sebaceous glands and these organisms are inaccessible to hand hygiene preparations. The resident flora consists mainly of coagulase-negative staphylococci, *Corynebacterium* spp. and anaerobes such as *Propionibacterium* spp. and rarely cause infection unless the skin is breached by a device such as a central venous catheter. The transient flora colonise the

superficial layers of the skin and are less adherent. They are more easily removed by handwashing and may be transferred by direct hand contact between human skin and the inanimate environment such as work surfaces or food, hence the term transient. The transient flora includes microorganisms which are frequently associated with nosocomial infection. Viruses are not considered part of normal flora and are therefore included as transient or contaminating flora which should be removed during hand hygiene practices (Sattar & Ansari, 2012). The number of microorganisms on intact areas of skin in the same person can vary from 100–10⁶/cm² (Noble & Somerville, 2010). The range of microorganisms can vary from person to person and HCWs may have different hand flora from ordinary members of the public and become permanently colonised with pathogenic flora acquired from the hospital environment (Guenther, Hendley & Wenzel, 2011; Strausbaugh *et al.*, 2011)

Hospitalised patients can also become colonised with microorganisms which survive well in the hospital environment including *Staphylococcus aureus*, enterococci, and Gram-negative bacilli such as *Pseudomonas* spp, *Klebsiella* spp, and *Acinetobacter* spp. There is evidence that although the skin flora vary considerably from person to person, the transient and resident flora remain uniform for an individual (CDCP, 2010)

In a healthcare setting, data are limited on the types of activities which are most likely to result in the contamination of hands and the transmission of the pathogens to patients. Nosocomial pathogens can be recovered from body fluids or infected areas of skin in patients, but also from intact skin of hospitalised patients. Nurses can contaminate their hands with nosocomial flora even when performing clean procedures involving direct patient contact such as taking blood pressure or touching a patient's hand or shoulder (Casewell & Phillips, 2012). Healthcare workers may also contaminate their hands by contact with a patient's inanimate

environment (Casewell & Phillips, 2012). The level of contamination depends on the duration and nature of the activity, though it is not known how many organisms are required for transmission or which activities are most likely to result in transmission (Casewell & Phillips, 2012; Pittet, Dharan, Touveneau, Sauvan & Perneger, 2012).

2.3 Resources for Practicing Hand Hygiene among Healthcare Workers

There are several different methods of measuring hand hygiene performance, such as direct observation of performances, conducting surveys using self-report of hand hygiene performance measuring product use and more recently using video and electronic surveillance monitoring systems (Monteiro, 2018). However, direct observation is the gold standard for measuring hand hygiene compliance. This approach is favored by the World Health Organization (WHO) as it can detect all hand hygiene opportunities, known as the “Five Moments for Hand Hygiene” (WHO, 2010). This method provides observers with quantitative and qualitative information to help identify barriers to compliance. The five moments for hand hygiene emphasizes hand hygiene before touching a patient, before clean/aseptic procedures, after body fluid exposure risk, after touching a patient, and after touching patient surroundings. Another movement that also identifies appropriate hand hygiene is the Clean-in and Clean-out Campaign, which asks all health professionals, clinical and non-clinical to clean-in and clean-out every time they enter and exit a patient’s room.

The act of performing adequate hand hygiene is extremely important and is measured by CDC’s recommended technique for using alcohol-based hand sanitizer and washing hands with soap and water (Monteiro, 2018). With alcohol-based hand sanitizer, each healthcare worker should perform adequate hand hygiene by putting the product on the hand and covering all

surfaces of hands until dry with the recommended time of 20 seconds. With washing hands with soap and water, the technique is to wet hands first and then to apply the product to hands, rubbing hands vigorously for 15-20 seconds, covering all surfaces of the hands and fingers then rinsing hands with water and using disposable towels to dry and to turn off faucet (Monteiro, 2018).

Formal written guidelines on hand hygiene practices in hospitals have been developed by the Centers for Disease Control and Prevention (CDC) and WHO. According to the WHO (2010), the indications for hand hygiene can be merged into five (5) moments during health care delivery. Adequate knowledge and recognition of these moments are the pillars for effective hand hygiene. Therefore, it is possible to prevent health care associated infections by cross transmission via hands if health care providers promptly identify these moments and comply with hand hygiene actions. These five moments that call for the use of hand hygiene include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings.

Hospital-acquired infection rates are also known to be highest in teaching hospitals (Samuel *et al.*, 2005). In Ghana, a cross-sectional observational study at the Komfo Anokye Teaching Hospital in Kumasi by Owusu-Ofori *et al* (2010) indicated that the most commonly identified barriers to hand hygiene by health workers were limited resources and lack of knowledge on appropriate times to perform hand washing or rubbing. A study conducted in 2009, at the Neonatal Intensive Care Unit (NICU) of the Department of Child Health in the Korle-Bu Teaching Hospital, Ghana by Asare *et al* (2009) indicated that hand hygiene compliance of physicians and nurses in that unit was low. Another study in Ghana by Yawson and Hesse (2013) showed that care-related Hand Hygiene (HH) compliance of doctors and

nurses was low and basic HH resources were deficient in all 15 service centres that were studied. In that study, care-related HH compliance among doctors ranged from 9.2% to 57% and 9.6% to 54% among nurses and HH compliance was higher when risk was perceived to be higher (*i.e.*, in the emergency and wound dressing/treatment rooms and labour wards). In that same study, facilities for HH, particularly alcohol hand rub and liquid soap dispensers were shown to be deficient.

2.4 Factors Affecting Hand Washing Compliance

Standard precautions are seen as fundamental to the prevention and control of HCAI and are an effective way of protecting healthcare workers, patients and members of the public. However, it is widely acknowledged and has been identified in a systematic review that compliance with standard precautions is sub-optimal on an international basis (Gammon, Morgan-Samuel & Gould, 2008).

In an observational study conducted among HPs in a tertiary hospital in Ghana, a hand washing compliance rate ranging from 9.2% to 57% among doctors and 9.6% to 54% among nurses was reported (Yawson & Hesse, 2013). Hand washing compliance among health professionals in general is unacceptably low especially in developing countries like Ethiopia with a range 5%–89% and average 38.7% (WHO, 2010). A study done in 2011 by Night project and Engender Health in Ethiopia showed that health care workers do not usually wash their hands on arrival to work place before putting on gloves (Wageriale, 2010). This study demonstrated that only 43.2% of the nursing staff practice adequate hand washing while 56.8% of them practice inadequate hand washing (Zegeye, 2016).

A study conducted in Health Institutions of Bahir Dar City Administration showed that 82.5% of health professionals had hand hygiene practice after completing the procedure they perform and about 50.8% wash their hand before the procedure. The overall hand hygiene practice score was 69.0% (Gulilat & Tiruneh, 2014).

A study conducted in ShenenGibe Hospital in Southwest Ethiopia showed that 68.8% had adequate practice and 82.97% were knowledgeable about hand washing (Stotie, Bezune, Joseph, Gebru, Ayene & Tamene, 2015).

Hand hygiene is the most important intervention in the control of cross-infection but levels of compliance can be poor (Naderi, Sheybani & Mostafavi, 2012). In relation to glove use similarly poor compliance levels have been highlighted (Chau *et al.*, 2011). There has also been a link established between glove use and hand hygiene compliance. Girou *et al* (2004), for example, in their observational study in France involving 120 healthcare workers identified that hand hygiene was not undertaken as a result of improper glove use in 64% of instances. Flores and Pevalin (2006) also reported that hand hygiene was adversely affected by the overuse of gloves on the basis of an observational study on 12 randomly selected wards. There is therefore a clear indication that staffs see glove use as negating the need for hand hygiene when this is not the case. Poor compliance with standard precautions has been found to be a risk factor for sharps injuries, with the risk of injury almost doubling in the United Arab Emirates due to poor compliance (Jacob, Newson-Smith, Murphy, Steiner & Dick, 2010). Compliance with isolation precautions has also been reported to be as low as 37% (Palmer *et al.*, 2014).

During the 2006 outbreak of severe acute respiratory syndrome (SARS), studies carried out by WFP/UNESCO/WHO (2011) suggests that washing hands as often as possible a day can reduce the spread of the respiratory virus by 55% and washing hands in particular — should not

be compromised by lack of water or lack of access to hand washing basins or suitable alternatives (WFP/UNESCO/WHO, 2011). Hoffman in 2003 indicated that water is and has always been mankind's most important resource and is recognized as the key environmental issue of the 21st century and a key to poverty alleviation (Hoffman, 2003). According to World Food Programme (WFP)/United Nations Education, Science and Culture Organization (UNESCO)/WHO (2011), water for hand washing, bathing and dishwashing should be of drinking-water quality, particularly if there are no specific drinking-water points.

The Centres for Disease Control and Prevention (CDC, 2017) has stated: "It is well documented that one of the most important measures for preventing the spread of pathogens is effective hand washing". Among the environmental health challenges in several regions worldwide are water and sanitation inadequacy; and a billion people lack access to safe drinking water, while 2.4 billion people still have inadequate sanitation according to Macy and Quick, (2003) and this has an adverse effect on individuals, households, communities and countries.

Factors reported to contribute to poor hand washing compliance include unavailability of hand washing sinks, time required to perform hand hygiene, patient's condition, effect of hand-hygiene products on the skin and inadequate knowledge of the guidelines (Danchaivijtr, Pichiansatian, Apisarntharak, Kachintorn & Cherdrungsi, 2015). Whilst most of these studies were done in foreign countries, very few, if any has been done in Ghana.

2.5 Challenges in Hand hygiene Practices

Although many countries have guidelines regarding hand hygiene for healthcare settings, overall compliance among healthcare workers remains poor (van de Mortel *et al.*, 2010). Improving hand hygiene remains a challenge for infection control practitioners in healthcare

institutions and in the community (Hassan, 2017). Scientific literature shows significant differences among Countries and among departments of the same Country with regard to the rates of infection, microorganisms, sites of infection, and antibiotic resistance profiles (Allegranzi & Pittet, 2010). Such discrepancies denote the need for aligning with and disseminating knowledge and skills for healthcare workers regarding best practices for preventing infections at the European and Italian levels (Agodi *et al.*, 2013; Moro, Marchi, Buttazzi & Nascetti, 2011), as well as the importance of an adequate surveillance system.

Despite the magnitude of Healthcare Associated Infections (HAI) problems and the importance of adherence to infection control policies, hand hygiene practice has remained unacceptably low (Takahashi & Turale, 2010; Trampuz & Widmer, 2014). Hand hygiene compliance rates in different developed countries rarely exceed 50% (Mani *et al.*, 2010; Maxfield & Dull 2011; Ott & French 2009). For instance, figures show that in the USA it is 50%, in Switzerland 42% and in the UK 32% (Takahashi & Turale, 2010). Hence, poor compliance has resulted in high morbidity and mortality. In the USA, there are between 1.7 and 2 million people who contract HAI and 88 to 99 thousand deaths are attributed to HAI annually. Furthermore, HAI affects nearly 10% of hospitalized patients and presents major challenges in healthcare facilities. Consequently, annual medical expenses have increased in the USA to approximately \$ 4.5 billion (Maxfield & Dull, 2011). Momen & Fernie (2010) report that in Canada approximately 8 thousand patients die from HAI annually. Canadian hospitals spend up to \$100 million per year treating patients with HAI. European countries also have a high percentage of HAI: in the UK, for example, each year approximately 9% of people admitted to hospital contract HAI; this is one of the highest percentages in Europe (Nazarko, 2011). The estimated number of deaths due to HAI among hospitalised patients in the UK is 500 patients

annually (Smith, 2009; Takahashi & Turale, 2010). The situation is even worse in developing countries, where resources and facilities are limited. According to Ogunsola & Adesiji (2008), the results from a survey conducted across 14 developing countries to evaluate the problem size of HAI, showed a wide range of nosocomial infection, from 3 –13.4% in an individual hospital. However, Devnani *et al.*, (2011), from another study conducted in developing countries, have reported a higher rate of HAI, 6 –27%. Sadly, more than 1.4 million people worldwide become seriously ill from HAI at any time in their hospitalisation (Devnani *et al.*, 2011; Momen & Fernie 2010).

Lack of hand hygiene products and facilities, such as running water, sinks, antiseptic or non-antiseptic soaps, alcohol hand-rubs and hand paper towels, can also play a major role in poor hand hygiene practice (Kampf & Loffler 2010; Mani *et al.*, 2010). Unavailability of facilities is even worse in developing countries. Ogunsola & Adesiji (2008) report that most wards in Nigerian hospitals lack adequate facilities for effective hand hygiene and use the bucket and bowl method as an alternative to running water. Likewise in India, Devnani *et al* (2011) report that insufficient or inconveniently positioned sinks, inadequate access to soap and water, unavailability of hand paper towels or electrical dryers are obstacles which hinder appropriate hand hygiene practice.

HAIs are not all preventable. Nevertheless, research has shown that the majority of infections are preventable through interventions based on effectiveness evidences (Umscheid, Mitchell, Doshi, Agarwal, Williams & Brennan, 2011). The vascular catheter-related and urinary catheter- related avoidable infections percentage has been estimated to be 65% to 70%. The determinants of HAIs on which it is possible to intervene for improving quality of care are: a) deficiencies in technology (e.g. appropriate safety devices) and structural work environment; b)

poor human resources management and work organization related to poor quality of interpersonal relationship, emotional disorder, and inadequate communication among staff members; c) health care practices that do not meet gold standards in reducing the infection risk (e.g. inappropriate application of standard precautions for specific diseases, and use of antibiotics) d) lack of information for workers about infection control systems, and poor participation in interventions for preventing or reducing the infection risk. Promoting these aspects would mean improve capacity in measuring and managing the HAI risks. Fostering a correct adherence to hand hygiene (HH) and to the use of personal protective equipment, could be a simple, efficacious and cost-effective strategy. Despite it is well documented that compliance with HH can reduce HAI rates and the antibiotic-resistant pathogens cross-transmission (Grayson, 2010; Rosenthal, Guzman & Safdar, 2011), non-compliance is still a main problem in hospital care. In both developed and developing Countries, health care workers have difficulty in adhering to hand hygiene practices (Moro *et al.*, 2011; Campagna *et al.*, 2016) An association was found between workload, infections and poor adherence to HH practices. In fact, a Swiss study showed that adherence to HH practices before device contact was 25% during understaffing and workload period, but increased to 70% at the end of this period (Harbarth, Sudre, Dharan, Cadenas & Pittet, 2010). Therefore, a way to reduce the HAI risk is to achieve enduring improvements in HH by implementing effective programs able to increase compliance with best practices in healthcare workers.

2.6 Preventing Healthcare Associated Infections (HAI) among Healthcare Workers and Patients

The human body provides protection against external environment pollutants to some extent. However, skin cracks and wounds can allow pathogens to enter the body. For this reason, personal hygiene is one of the most important practices in terms of protecting the body from diseases (Hossain, 2012). Hygiene is a personal matter. Hygiene practices, taught during childhood by mothers, fathers or teachers, mostly through practicing, need to be continued by the individual after childhood. Correct adoption of these habits has a direct impact on a person's future health (Hossain, 2012). Hygiene behaviour includes hand hygiene, personal care, home hygiene and food hygiene. Individual hygiene behaviours can be affected by many factors, including beliefs, values, habits, socio-economic and cultural factors, level of knowledge Personal preferences, family characteristics and physical and social characteristics of the work and living environments. Therefore, the hygiene habits of each individual differ, meaning that these habits are unique to individuals (Aiello, Coulborn, Perez& Larson, 2008; Görgülü, 2000).

The primary measure in preventing HAIs among healthcare workers and also enhancing patient safety is hand hygiene (WHO, 2009). Hand hygiene is the act of cleaning one's hands by washing them with soap and water, antiseptic hand wash or antiseptic hand rubs such as an alcohol-based hand sanitizer including foam or gel. Major contributors to the spread of HAI's are through person-to-person transmission via contaminated healthcare personnel's skin or contact through shared items and surfaces (Hassan, 2015). Several HAI outbreaks have been associated with contaminated healthcare workers' hands (Chavali, 2016). "On average, healthcare providers clean their hands less than half the number of times they should" (CDC, 2017). Increasing hand

hygiene has been shown to markedly reduce infections rates and considerably reduce the cross-transmission of multidrug-resistant pathogens (WHO, 2014).

While hand hygiene has been proven to be a major infection control prevention approach, hand hygiene compliance remains alarmingly low, in the range of 30% to 50% (Boyce, 1999). Hand hygiene compliance levels are considered excellent at 90% or higher (WHO, 2014). It is believed that non-compliance by healthcare workers is triggered by inadequate time, heavy workloads, lack of education, and overall skepticism about hand hygiene as a preventative practice (Pittet, 2001). The challenge is to sustain high compliance rates among healthcare workers who directly work with patients and their immediate environments.

A generous amount of clean water for washing Hands is effective at reducing the presence of some viruses but to remove contamination from bacteria, parasites, and fungi, the use of soap or alternative rubbing agents is necessary (Aiello, Coulborn, Perez & Larson, 2010). An alternative to soap that may be considered is alcohol-based hand sanitizers (Palmer *et al.*, 2014) but the risk of poisoning and intoxication and the high cost must be considered carefully according to Roberts, Smith, Jorm, Patel, Douglas & McGilchrist (2010). Too often one forgets hand washing which is a simple and effective way to reduce cross-contamination (Erkan, Findik & Tokuc, 2011). According to Pittet *et al.*, (2001) lack of knowledge among personnel about the importance of hand hygiene in reducing the spread of infection and how hands become contaminated, lack of understanding of correct hand hygiene technique, understaffing and overcrowding, poor access to hand washing facilities, irritant contact dermatitis associated with often exposure to soap and water, and lack of institutional commitment to good hand hygiene are among the many factors that have contributed to poor hand washing compliance among health care workers. The United State Food and Drugs Administration (US FDA) stated that food

employees should clean their hands and expose portions of their arms for at least 20 seconds while paying attention to removing soil from underneath the fingernails. Food employees may use disposable paper towels or similar clean barriers when touching surfaces such as manually operated faucet handles to prevent recontamination of the hands after washing (United State Food and Drugs Administration, 2015).

An essential component of effective hand washing is hand drying. Damp hands as a result of ineffective hand drying can lead to skin excoriation which in turn leads to higher numbers of bacteria colonizing the skin and facilitating the spread of microorganisms (Hassan, 2017). Stebbins, Cummings & Stark (2011) found that education and hand hygiene was highly effective in reducing school absenteeism and confirmed cases of influenza A (but not influenza B). Infrastructural, cultural, and behavioural changes as well as substantial resources which take time to develop (e.g. trained personnel, community organization, provision of water supply and soap) may be required in hand washing (Erkan *et al.*, 2011). Therefore a prerequisite to a child's survival is good hand washing practice (UNICEF, 2016; Curtis and Caimcross, 2003). Bennell (2002) also argues that since school children in developing countries account for up to half of the population, promotion of this good hygiene and hand washing practice is not only necessary but also very relevant.

World Health Organization (WHO) introduced "My five moments for hand washing" to minimize problems related to hand washing. These five moments that call for the use of hand washing include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings (Basurrah & Madani, 2009). Godoy, Pumarola & Sierrain 2011, stated that in Spain as in other countries, among the measures to reduce the transmission of

pandemic influenza and other respiratory viruses are the promotion of hand hygiene and the provision of information on respiratory and hand hygiene while Fung and Cairncross (2006) as cited by Godoy *et al.*, (2011), indicated that some of these measures were also used to mitigate the 2003 outbreak of severe acute respiratory syndrome (SARS). Skin infections, eye infections, intestinal worms, SARS, and avian flu can also be prevented through hand washing (Godoy *et al.*, 2011). By bringing the lessons learned in social and commercial marketing to hygiene programming, the Public-Private Partnership for Hand Washing (PPPHW) aims to catalyze effective, sustainable changes in hand washing behaviour on a large scale.

As a study conducted to examine the hand hygiene knowledge, beliefs, and practices of Italian nursing and medical students with the aim of informing undergraduate curricula, a questionnaire was administered to convenience sample of 117 nursing and 119 medical students in a large university in Rome, Italy. The result of the study showed that nursing students' hand hygiene knowledge ($F = 9.03$ (1,230); $P = 0.003$), percentage compliance ($Z = 6.197$; $P < 0.001$) and self-reported hand hygiene practices ($F = 34.54$ (1,230); $P < 0.001$) were significantly higher than those of medical students. There were no statistically significant differences between hand hygiene beliefs (Van De Mortel, Kermode, Prozano & Sansoni, 2012).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents a brief description of the study area. It also presents the methods to be used in the data collection, the sampling technique and the procedures to be used for the data analysis which constitutes the research methodology. Basically this section is a presentation of how the research will be conducted.

3.2 Study Area

The study was conducted at the Kaneshie Polyclinic in the Greater Accra Region of Ghana. Kaneshie Polyclinic, is government owned, providing general / specialist health services. It is located in Accra, and is NHIS accredited. Kaneshie is a suburb of Accra Metropolitan District, thus the Okaikoi Sub Metro of the Greater Accra Region of Ghana, and is one of the highly populated places in the Greater Accra Region. According to the 2010 census, Accra has a population of 4,010,054, making it the most populous, behind the Ashanti Region. Accra is made up of 10 districts, Kaneshie inclusive (Ghana Statistical Service, 2014).

Since its establishment in 1898, the Accra Metropolitan Area (AMA) has been the Regional capital for the Greater Accra Region. In addition, it serves as the national capital of Ghana. The City of Accra is bounded to the North by Ga West Municipal, the West by Ga South Municipal, the South by the Gulf of Guinea, and the East by La Dade kotopon Municipal. It covers a total land area of 139.674 Km². This chapter describes the physical features, political and administrative structure, social and cultural characteristics, the local economy, the

organisation of the report and some concepts and definitions as adhered to during the 2010 Population and Housing Census.

The name was derived from a word in the Ga-Adangbe that is "Kane Shie Shie" meaning, "under the light". The Kaneshie market is a trading centre in Kaneshie, Accra. It was built in the 1970s. During the 2015 Accra floods, the market was submerged and operations were forced to shut down.



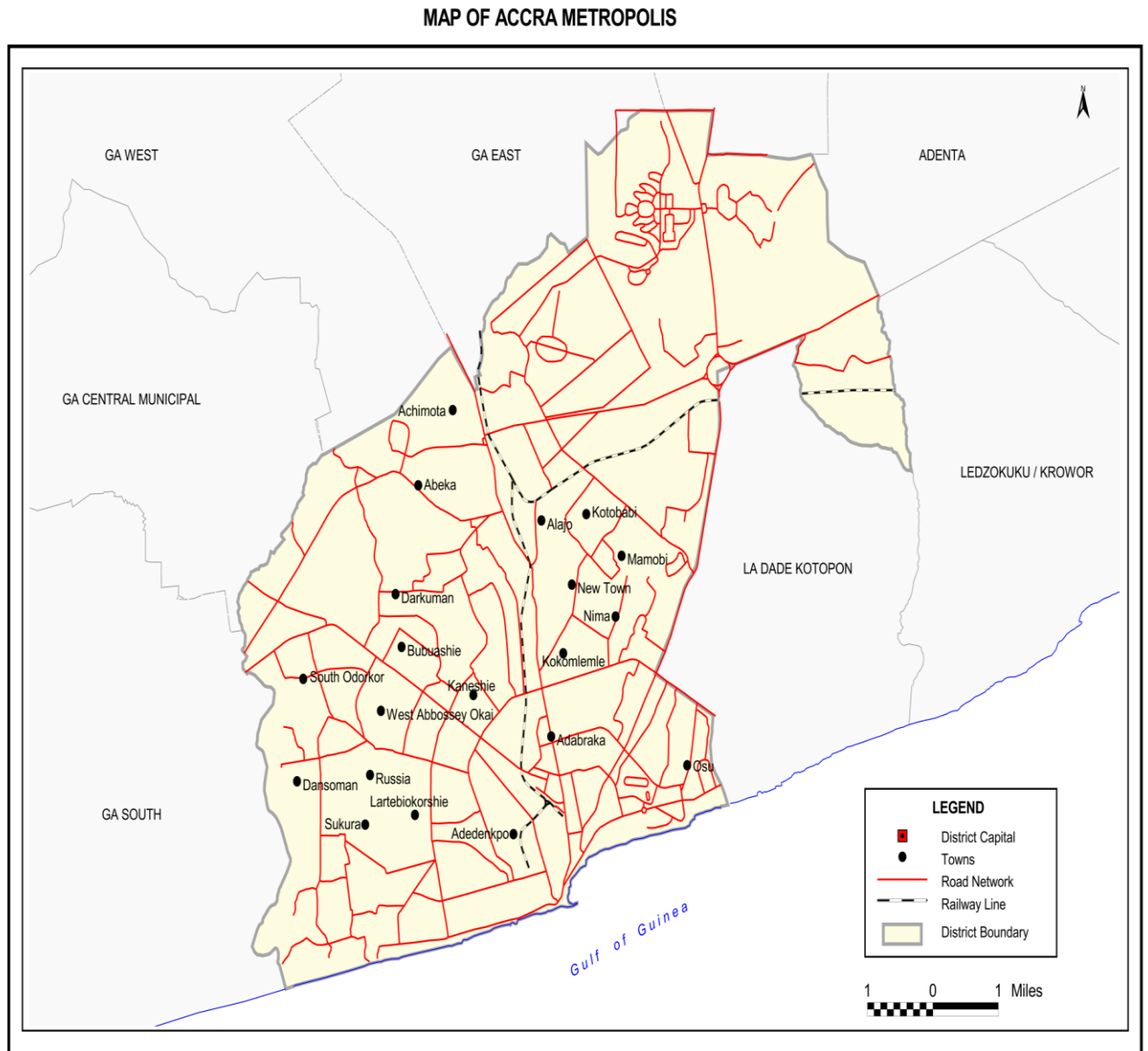


Figure 1: Location of Study area

Source: Ghana Statistical Service, 2014

3.2.1 Geology and soil of the study area

The geology of the AMA consists of Precambrian Dahomeyan Schists, Granodiorites, Granites Gneiss and Amphibolites to late Precambrian Togo Series comprising mainly Quartzite,

Phyllites, Phylitones and Quartz Breccias. Other formations found are the Palaeozoic Accraian Sediments-Sandstone, Shales and Interbedded Sandstone-Shale with Gypsum Lenses. The coastline of the Metropolis has a series of resistant rock outcrops and platforms and sandy beaches near the mouth of the lagoons. The coastline is exposed and because of the close proximity of the continental shelf, a strong coastal and wind action, it is subject to severe erosion. The soils in the Metropolitan area can be divided into four main groups: drift materials resulting from deposits by windblown erosion; alluvial and marine mottled clays of comparatively recent origin derived from underlying shales; residual clays and gravels derived from weathered quartzites, gneiss and schist rocks, and lateritic sandy clay soils derived from weathered Accraian sandstone bedrock formations. In many low lying poorly drained areas, pockets of alluvial 'black cotton' soils are found.

3.2.3 Climate of the study area

The Accra Metropolitan Area lies in the dry equatorial climatic zone. It experiences two rainy seasons. The first begins in May and ends in mid-July while the second season begins in mid-August and ends in October. It has an average annual rainfall of about 730mm which is the lowest in the country. There is very little variation in temperature throughout the year. The mean monthly temperature ranges from 24.7°C in August (the coolest) to 33°C in March (the hottest) with annual average of 26.8°C (Dickson and Benneh, 2011). As the area is close to the equator, the daylight hours are practically uniform throughout the year. Relative humidity is generally high varying from 65% in the mid-afternoon to 95% at night.

3.2.4 Relief and drainage of the study area

The land area consists of gentle slopes interspersed with plains in most parts and generally undulating at less than 76 metres above sea level. The slopes are mostly formed over the clay soils of the Dahomeyan gneiss with alluvial areas surrounding the low lying coastal lagoons. The Akwapim range and the Weija hills rise steeply above the western edge. The crest of the Akwapim range lies generally at 300m southwards. This line of hills continues through to the

Weija hills with the highest point reaching 192m near Weija. There are two main rivers namely, the Densu and Ponpon River, which drain the Municipality. Densu is one of the main sources of water supply to more than half of the population of the Accra Metropolis.

3.2.5 Vegetation of the study area

There are three broad vegetation zones in Accra Metropolitan area, which comprise shrub land, grassland and coastal lands. Only the shrub land occurs more commonly in the western outskirts and in the north towards the Aburi Hills. It consists of dense clusters of small trees and shrubs, which grow, to an average height of about five metres. The grasses are mixture of species found in the undergrowth of forests. They are short and rarely grow beyond one metre. Ground herbs are found on the edge of the shrub. They include species, which normally flourish after fire. The coastal zone comprises of two vegetation types, wetland and dunes. Mangroves, comprising of two dominant species, are found in the tidal zone of all estuaries sand lagoons. Salt tolerant grass species cover substantial low-lying areas surrounding the lagoons. There are a number of wetlands and water bodies which create micro climates in some parts of the

Metropolitan Area. However, the original vegetation of the Metropolitan Area has been altered in the more recent past century by climatic and human factors.

Economy

The Accra Metropolitan Area is the economic hub of the Greater Accra Region and the rest of the country. It hosts a number of manufacturing industries, oil companies, financial institutions, telecommunication, tourism, education, health institutions and other important establishments. These institutions provide employment opportunities to residents of the City. Their presence continues to attract people from all parts of the country and beyond to transact various businesses. Majority of residents in the city are engaged basically in the primary, secondary and tertiary sectors of the economy. They are engaged in occupations or employments such as trading, construction, fishing, farming, services, manufacturing among others. The indigenous people until recently were mostly engaged in fishing and farming.

3.3 Research Design

Institution-based descriptive cross sectional study was used to assess the practice of hand washing among health professionals at the Kaneshie Polyclinic. Descriptive study comprises the gathering of data in order to get answers to the research questions regarding the current status of the subject under study. This descriptive design helps to accomplish the objective of the study and draw significant conclusions from the study.

3.4 Study Population

Targeted population to participate in the study was health professionals which include 60 nurses, 25 administrators and 15 doctors. Written consent was obtained from those who volunteered to participate in the study and confidentiality was ensured throughout the study.

3.5 Sources of Data

The sources of data for the study were from primary and secondary sources. The primary data was obtained from the field through various data collection techniques, including questionnaire survey, interviews, and field observation. Secondary data was sourced from books, relevant articles, journals and magazines as well as relevant publications and researches conducted on the subject matter by individuals and institutions.

3.6 Sample size

A sample of hundred (100) health professionals was considered for the survey. This includes doctors and nurses at the Kaneshie Polyclinic.

3.7 Description of Instruments

In conducting this study, structured self-administered questionnaires were used to collect the relevant data. The questionnaires contained closed and open ended questions about three different parts which included socio demographic characteristics, knowledge of hand washing, and practice of hand washing among nurses and doctors. These questionnaires were distributed to wards, emergency department, laboratories, outpatient departments, operation room, pediatrics, injection and dressing rooms, EPI unit, F.P unit, and others. The distributed questionnaires were collected. In addition to this, observational checklist was used to collect data on practice of hand washing of health professionals.

3.8 Sampling Procedure

The study employed both quantitative and qualitative data collection techniques in the form of a survey. Simple Random sampling and Purposive sampling techniques were employed to select respondents. Purposive sampling technique was applied to select hundred (100) health professionals including Doctors and nurses at the Kaneshie Polyclinic. The Simple Random sampling technique is the process of sampling which gives every member of the population the chance of being selected once. These respondents were purposively selected because they represented information-rich cases that gave rich insight to the study. Structured questionnaires and observation were used as the main instrument to collect data. The questionnaires were administered to health professions at the Kaneshie Polyclinic.

3.9 Data analysis

The data collected for the study were analyzed with the aid of Statistical Package for Social Sciences (SPSS) software version 16.0. According to Bryman (2012) qualitative data that is collected is first transcribed and coded taking theoretical ideas as well as the main themes of the study into perspective. This was what guided the analysis and so after collecting the data I transcribed the interviews and coded them. The transcription and coding was to organise and give meaning to the data. Therefore SPSS was extensively utilized to analyze responses from respondents to give an account in the form of illustrated diagrams and tables for easy comprehension. Statistical tools such as bar graphs and pie charts were used in the analysis.

3.10 Ethical Issues and Clearance

One of the most critical issues of concern in research is the ethical considerations and how the researcher goes about it. This can be said to be the standards and principles that govern the conduct of research. Diener and Crandall (2011) discuss ethical issues and categorized them under four main areas. These areas include harm to participants, invasion of privacy, informed consent, and whether there is deception. Issues regarding harm to participants mean researchers need to be careful and ensure that their research does not inflict any harm on participants.

According to Bryman (2012), the issue of harm to participants has to do with how researchers maintain the confidentiality of records. This means the identities and records of participants should be handled with confidentiality. The findings should also not reveal the identities of the participants as this can be harmful to them. However, with this study, participants were made to understand that they had the right to participate voluntarily and could also withdraw from the study at any point they so wished. Again, notion of confidentiality and anonymity was discussed with participants prior to their participation in the research. Also, the study did not allow respondents to provide their names on the questionnaires making traceability impossible, thereby ensured confidentiality.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter is a presentation of the results of the analyzed data based on the data gathered from the study area. It also discusses the findings obtained from the study by assigning reasons and implications of the results in relation to the information obtained.

4.2 Demographic Background of Respondents

4.2.1 Gender of Respondents

Table 4 shows that out of the respondents interviewed for the study, 56% of the respondents were female's while 44% of the respondents were males. This indicates that majority of women are within the health sector compared to men. It also confirms a statistic from the Ghana Ministry of Health (2011), that nursing profession is mainly dominated by females throughout the world including Ghana. It is therefore not surprising that the majority of respondents were females. A study by Ling (2012) revealed that female healthcare workers tend to wash hand more often than male ones, meaning, that it is expected that more females than males would practice hand washing compared to males.

Table 1: Gender of Respondents

Gender	Frequency	Percent (%)
Females	56	56
Males	44	44
Total	100	100

Source: Field survey, August 2020

4.2.2 Age of Respondents

The study revealed that 60% of the respondents were between the age category of 31-40 years, 24% of the respondents were also between the age category of 41-50 years while 16% of the respondents were between the age category of 20-30 years. This result as shown in Table 2 indicates that most of the respondents interviewed are quite young and youthful. The finding also confirms a study by Gebresilassie, Kumel & Yemane (2014) that younger Health Care Workers are likely to practice hand-washing compared to older ones.

Table 2: Age of Respondents

Age category	Frequency	Percent (%)
20-30 years	16	16
31-40 years	60	60
41-50 years	24	24
Total	100	100

Source: Field survey, August 2020

4.2.3 Educational Background of Respondents

The diagram shows that 55% of the respondents have had their education up to the tertiary level while 23% of the respondents have also had their education up to the secondary level with 22% of the respondents also have had their education up to the Middle School Certificate/Junior High School (MSC/JHS) level. This indicates that all respondents have had education at various levels with majority being tertiary school graduate. However hand hygiene is part of standard precaution which is taught pre-clinical exposure to all health care workers.

McGuckin, *et al* (2011) argues that the high level of knowledge on hand washing by the HCWs is not unexpected by virtue of their medical background. The results of McGuckin, *et al* (2011) study shows that hand hygiene was independent from level of education, meaning, it is all about priorities and behaviour change. This is shown in Figure 2:

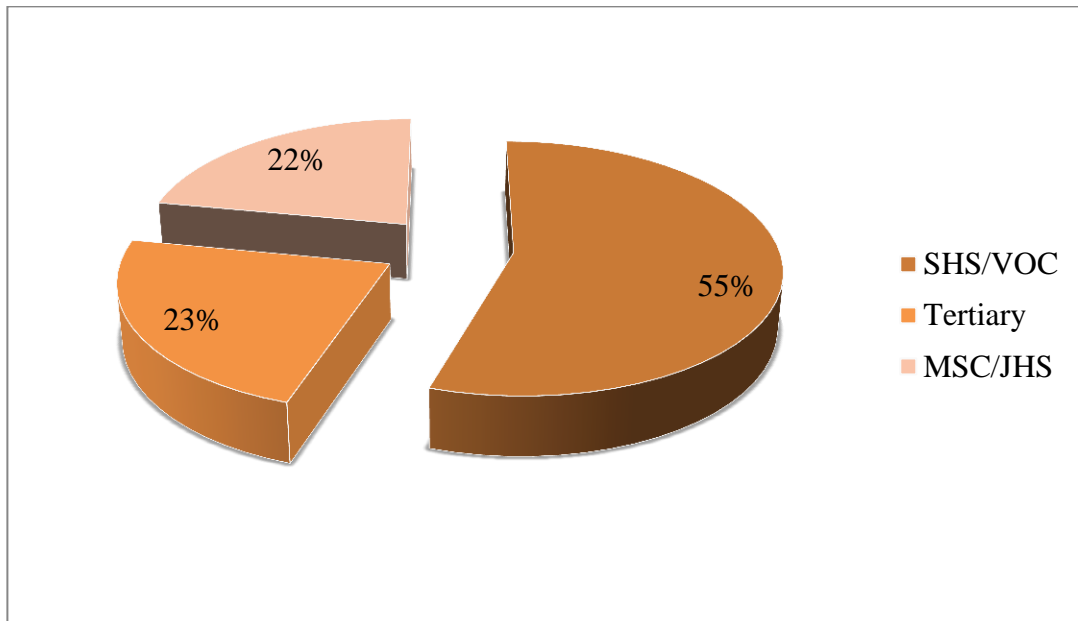


Figure 2: Educational Background of Respondents

Source: Field survey, August 2020

4.2.4 Duration of Stay at Health Facility

The Figure 3 further revealed that 44 of the respondents representing 44% have been working in the health facility for about 11-15 years, 22 of the respondents representing 22% have stayed in the health facility for 16-20 years while 22 of the respondents representing 22% also believe they have stayed in the health facility for 6-10 years now with 12 of the respondents representing 12% also having stayed in the health facility for about 0-5 years now. This shows that majority of the respondents considered for the study have stayed long within the health

sector and therefore are quite experience. According to a study by Ling (2012), the level of working experience was not associated with hand hygiene adherence rates.

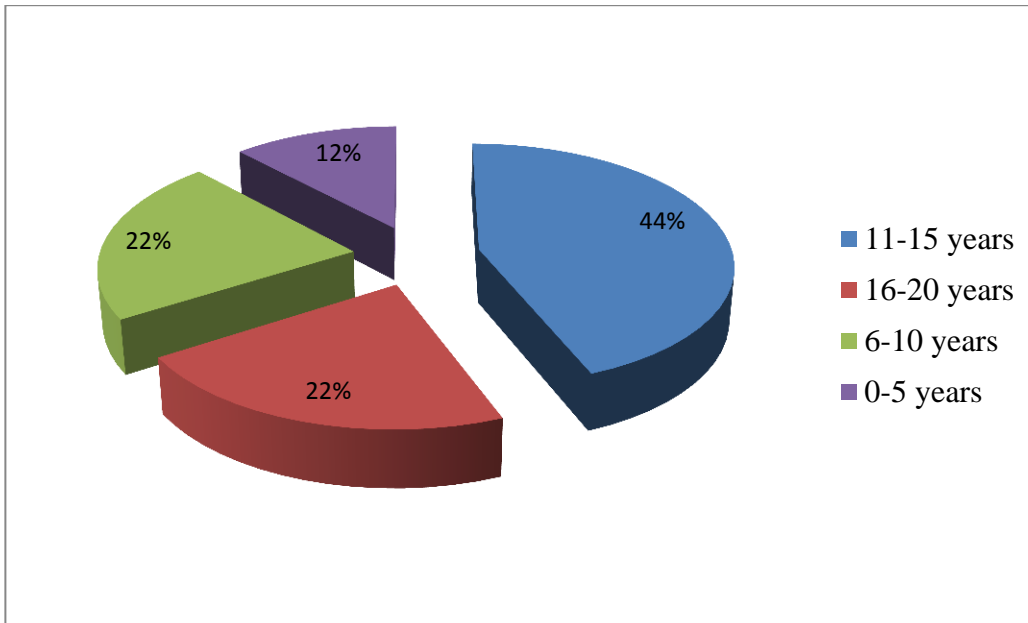


Figure 3: Duration of Stay at Health Facility

Source: Field survey, August 2020

4.2.5 Positions held at the Health Facility

Table 3 shows that 56 of the respondents representing 56% when questioned about their position were nurses, 32 of the respondents representing 32% were administrators while 12 of the respondents representing 12% were doctors. This indicates that majority of the respondents who participated in the survey were mostly nurses. It also confirms a statistic from the Ghana Health Service (GHS) (2011), that nurses dominate almost all health facilities in the country as they serve as front liners for any medical condition. According to Yawson (2013) nurses constitute the largest percentage of the health care workers (HCW) and they are the “nucleus of the health care system”. Because they spend more time with patients than any other HCWs and

their compliance with hand washing guidelines seems to be more vital in preventing the disease transmission among patients (Gessesew & Kahsu, 2009).

Table 3: Positions held at the Health Facility

Job Description	Frequency	Percent (%)
Nurses	56	56
Administrator	32	32
Doctors	12	12
Total	100	100

Source: Field survey, August 2020

4.3 Practices of Hand Washing

Knowledge of good hand hygiene practice and compliance in hand hygiene as per WHO guidelines is essential for lowering Hospital Acquired Infections (HAIs) (WHO, 2014). It was revealed from the study as indicated in Figure 4 that 64% of the respondents believe that they have knowledge about hand hygiene while 36% of the respondents representing 36% also believe that they don't have knowledge about hand hygiene though they have heard it before. This clearly indicates that most of the respondents interviewed had knowledge about hand hygiene. This finding is inconsistent to study by Nair *et al.*, (2016) in which 62% of the participants had only moderate knowledge of hand hygiene practices.

However, the low level of knowledge of hand hygiene among some health workers especially those in the administration department in the current study was attributed to their workload and nature of their work, where they are required to work under severe pressure, and often missing the opportunity to comply to hand hygiene. A respondent said:

“My work here is not easy at all, I have to attend to a number of emergency cases which mostly comes from some health workers as well as some patients so I don’t even have enough time to practice hand hygiene” (Vida Lamptey, 6th August 2020).

Further responses revealed that the regular washing of hands among health workers keeps them away from germs and also good for their wellbeing.

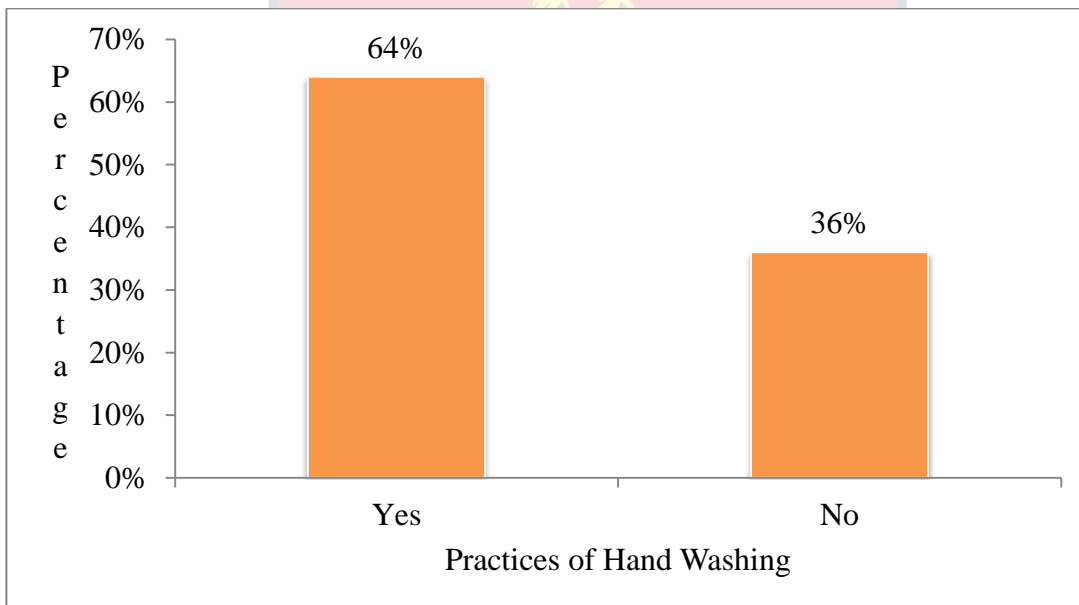


Figure 4: Practices of Hand Washing

Source: Field survey, August 2020

4.3.1 Effective Step to Control any Infections

Infection control practices are of critical importance to overall quality of care and safety of healthcare workers and their patients and the community at large. Amid Covid-19, the study

questioned respondents about the effective step to control any infections. The study as shown in Figure 5 revealed that 56 of the respondents representing 56% believe that wearing protective gloves is the most effective step of controlling any infections while 44 of the respondents representing 44% also were of the opinion that wearing face mask is the effective step of controlling any infections. This result indicates that health workers are very much aware of the steps to adopt when faced with any infections especially within this period of Covid-19 pandemic. This also confirms why WHO recommends all persons to frequently wash their hands prevent themselves from being infected with Covid-19. This is shown in Figure 5:

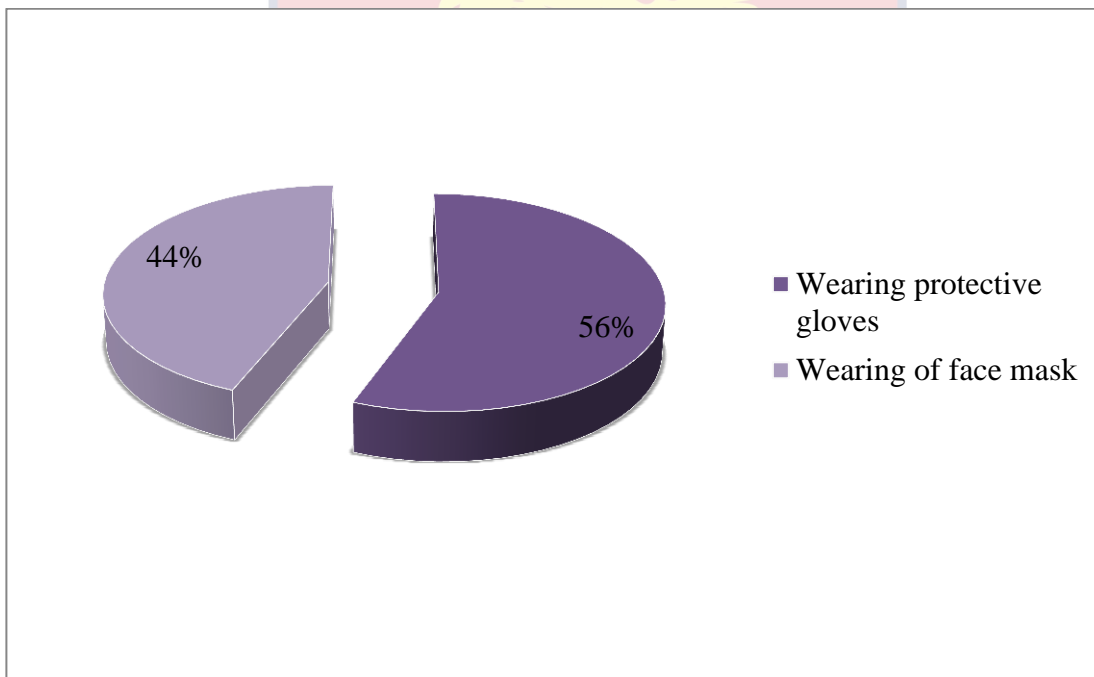


Figure 5: Effective Step to Control any Infections

Source: Field survey, August 2020

4.3.2 Frequency of Hand Washing by HW

Of the 100 respondents who participated in the study, 56% were of the opinion that the hands should be washed first thing in the morning, 32% of the respondents believe that the hands

should be washed whenever one returns from lunch while 12% of the respondents were of the opinion that its very necessary to wash the hands after every interaction with people. This is quite a disturbing finding among health workers who are supposed to know the causal relationship between regular hand washing and good hand hygiene to prevent diseases. Also, this result contradicts a report by WHO (2010) that the critical moments in hand washing are before meals and snacks and after defecation. However, the result indicates that hand washing is important practice not only for health care workers but for the general public as it's the surest way of preventing any infections. This is shown in Table 4:

Table 4: Frequency of Hand Washing by HW

When Should We Wash Our Hand	Frequency	Percent (%)
First thing in the morning	56	56
When we return from launch	32	32
After every interaction	12	12
Total	100	100

Source: Field survey, August 2020

4.3.3 Hand Washing with Soap under running water as expected practice by HC

During daily activity, health workers progressively accumulate microorganisms on their hands from direct patient contact or contact with contaminated environmental surfaces and devices. These organisms are easily removed by hand washing with soap (Fadeyi *et al.*, 2010). Figure 6 shows that 55% of the respondents don't wash their hands each time with soap under running water while 45% of respondents wash their hands each time with soap under running water. This indicates that respondents are quite divided with regards to washing of hands with

soap under running water. The finding supports findings by other studies that rates of hand washings with soap and water before interacting with patients are low (Lankford *et al.*, 2003; Fadeyi *et al.*, 2010). A respondent lamented that:

“Formerly, the polyclinic had a number of liquid soap in almost all the wash rooms as well as some vantage points within the polyclinic but some patients and sometimes even health workers take the liquid soap home.....” (David, 6th August 2020).

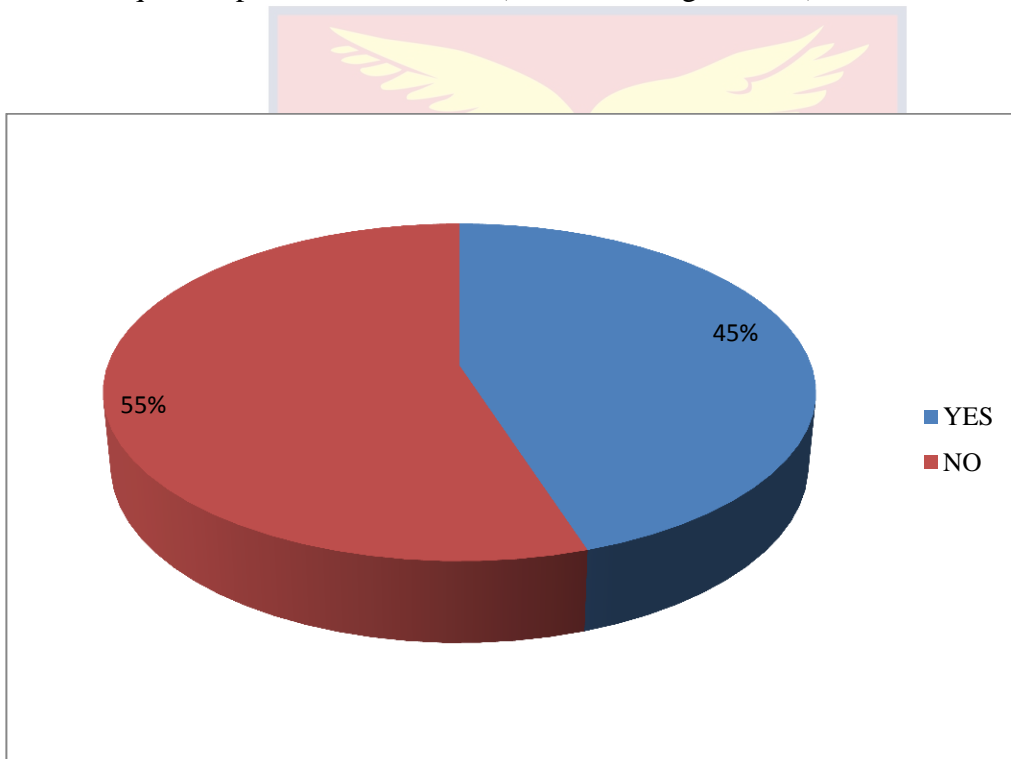


Figure 6: Hand Washing with Soap under running water by HCW

Source: Field survey, August 2020

4.4 Availability of Resources for Hand washing Practice

The availability of resources to health workers is crucial to ensuring safe hand hygiene practices which reduces infections both among health workers and patients as well. Yuan, Dembry, Higa, Fu & Wang (2012) stated that resource gaps can limit improvements in hand

hygiene practices whereas healthcare workers both appreciated and understood the importance of hand hygiene and the recommended practices. From the study though majority of the respondents believe that the best disinfectant is water and soap, it was equally revealed that resources needed to ensure a safe hand hygiene practices was either inadequate or unavailable.

Fifty two percent of the respondents believe that due to the unavailability of acceptable soap products they do not feel comfortable practicing hand washing, number of respondents representing 24% also lamented about the unavailability and functioning of soap dispensers within the health facility while 14% of the respondents also were not sure there are disposable hand towel available and accessible within the health facility with 10% of the respondents also of the opinion that hand hygiene posters demonstrating good hand washing techniques are inadequate within the health facility. This finding as shown in Figure 7 indicates that hand hygiene practices among health workers is not quite encouraging due to the unavailability of resources to practice good hand hygiene. This agrees with the 76.6% rate of inadequate resource supply found by Njovu, (2016). The indication therefore is that, low availability of IPC resources is a widespread problem especially in developing countries, and could be attributed to lack of funds to procure the needed resources.

However, it was also observed that the health facility had quite a number of alcohol hand rubs which most of the times health workers use to rub off their hands especially after attending to patients at the health facility. This confirms a report by Pittet *et al.*, (2010) that hand hygiene is significantly improved when Health workers use alcohol-based product rather than antiseptic detergent to clean their hands.

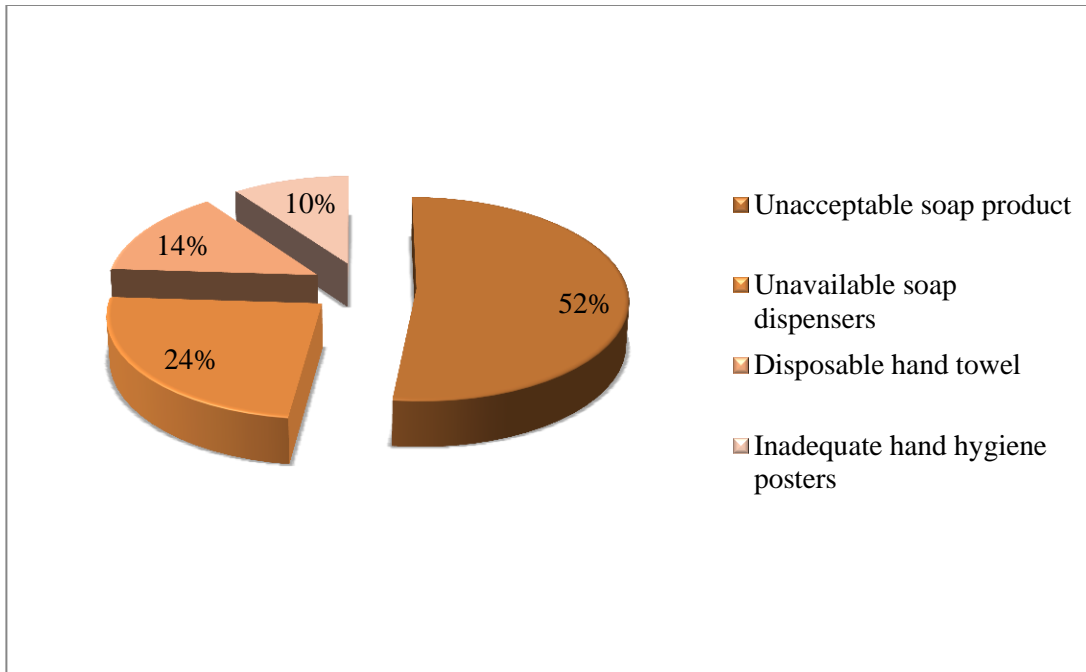


Figure 7: Availability of Resources for Hand washing Practice

Source: Field survey, August 2020

4.5 Hand Washing Compliance by HW

4.5.1 Factors Preventing Respondents from Practicing hand washing

Noncompliance with guidelines and recommendations of hand hygiene are due to many factors. The factors may be due to lack of time, forgetfulness, lack of adequate facilities, lack of institutional commitment, lack of motivation, and skin irritation to hand hygiene products (Boyce & Pittet, 2012). It was revealed from the study especially upon observation that health workers sometimes do not practice the hand hygiene as expected of them, indicating a non compliance of hand washing practice. The study indicated that 56 of the respondents representing 56% believe that they sometimes forget to practice hand hygiene, 22 of the respondents representing 22% also believe that they are sometimes too busy to wash their hands while 22 also representing 22% were of the opinion that they do not get convenient location to do that. This finding as shown in

Table 5 indicates that health workers thou are expected to set the standard for hand hygiene for patients as well as the general public to comply are also faced with a number of factors which prevents them from practicing hand hygiene. A respondent when interrogated further said:

“Let me be sincere with you, we are humans and we are not hundred percent perfect so as health workers we are also bound to make mistakes but that should not compromise the standard of hand hygiene” (Linda Amoakohene, 6th August 2020).

Table 5: Factors Preventing Respondents from Practicing hand hygiene

Factors	Frequency	Percent (%)
Forget	56	56
At times busy	22	22
Not in convenient location	22	22
Total	100	100

Source: Field survey, August 2020

4.5.2 Knowledge of WHO’s Hand washing Guidelines

The study found that the overall level of knowledge of WHO’s hand washing guidelines among participants was high. 88% of the respondents believe they have knowledge about the guidelines while 12% agreed that they had no knowledge about the guideline. This level of knowledge is high compared with that found by Njovu, (2016) which was 60.7% and could be due to the increased training and awareness creation about the WHO’s protocols. This is shown in Figure 8:

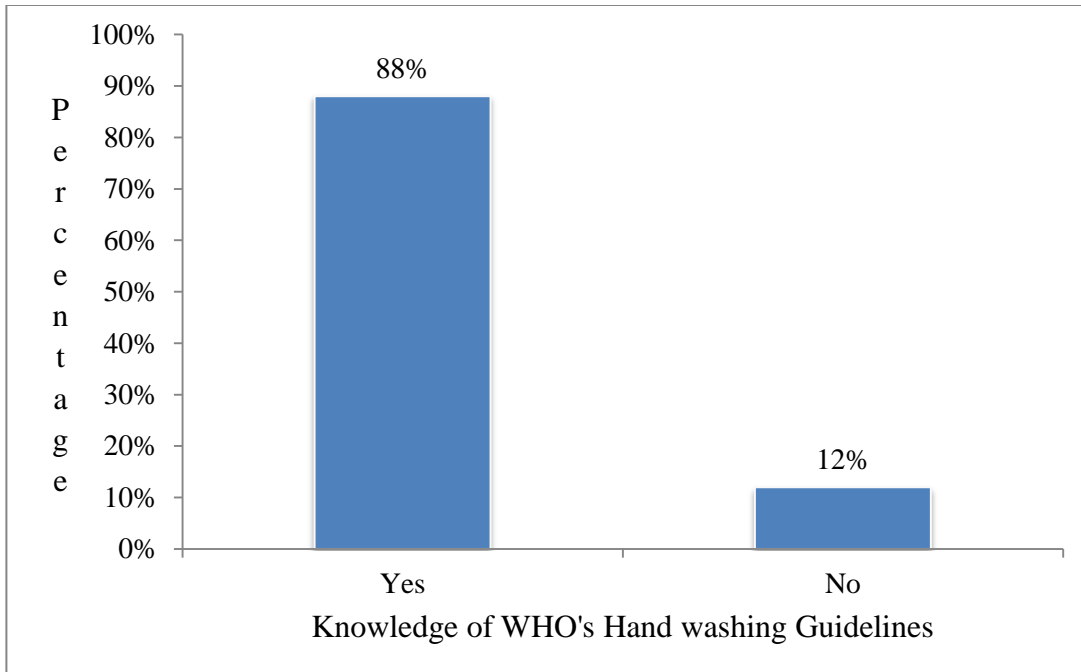


Figure 8: Knowledge of WHO's Hand washing Guidelines

Source: Field survey, August 2020

4.6 Preventing Healthcare Associated Infections (HAI) through hand washing

When respondents were asked about the ways and means of preventing healthcare associated infections, the study revealed that majority of the respondents representing 68% believed that performing hand hygiene in the recommended way can reduce medical costs associated with hospitals acquired infections while 32% of the respondents were of the opinion that following the example of senior health care workers with regards to the compliance of good hand hygiene practice will also prevent healthcare associated infections. This will ensure the safety of both health workers and patients from acquiring Nosocomial infections. This is indicated in Figure 9:

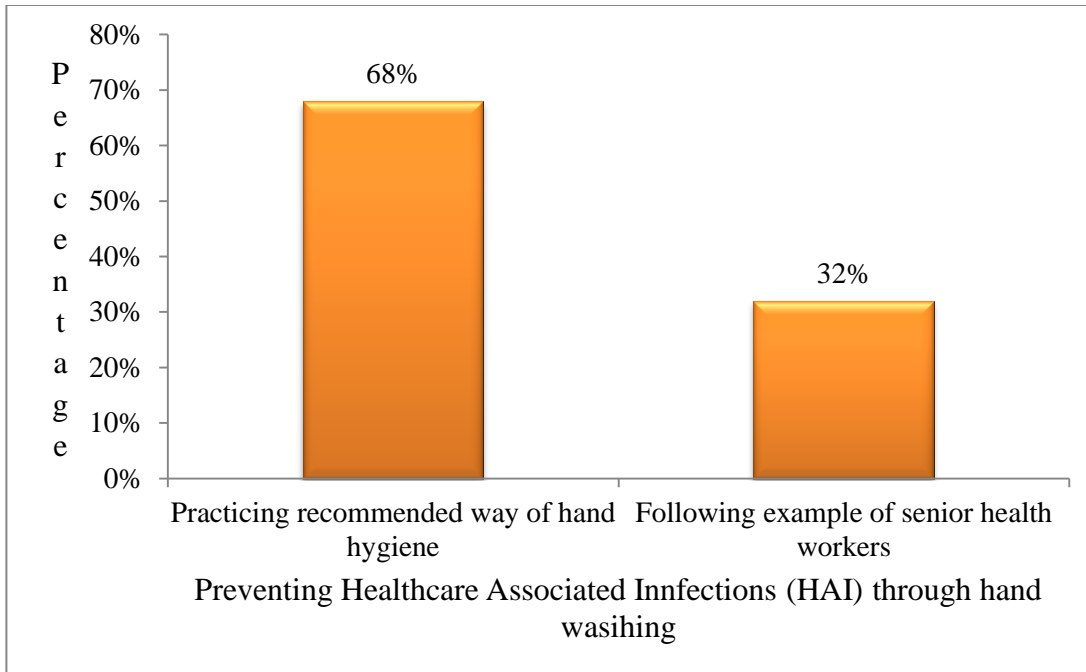


Figure 9: Preventing Healthcare Associated Infections (HAI) through hand washing

Source: Field survey, August 2020

4.7 Discussion

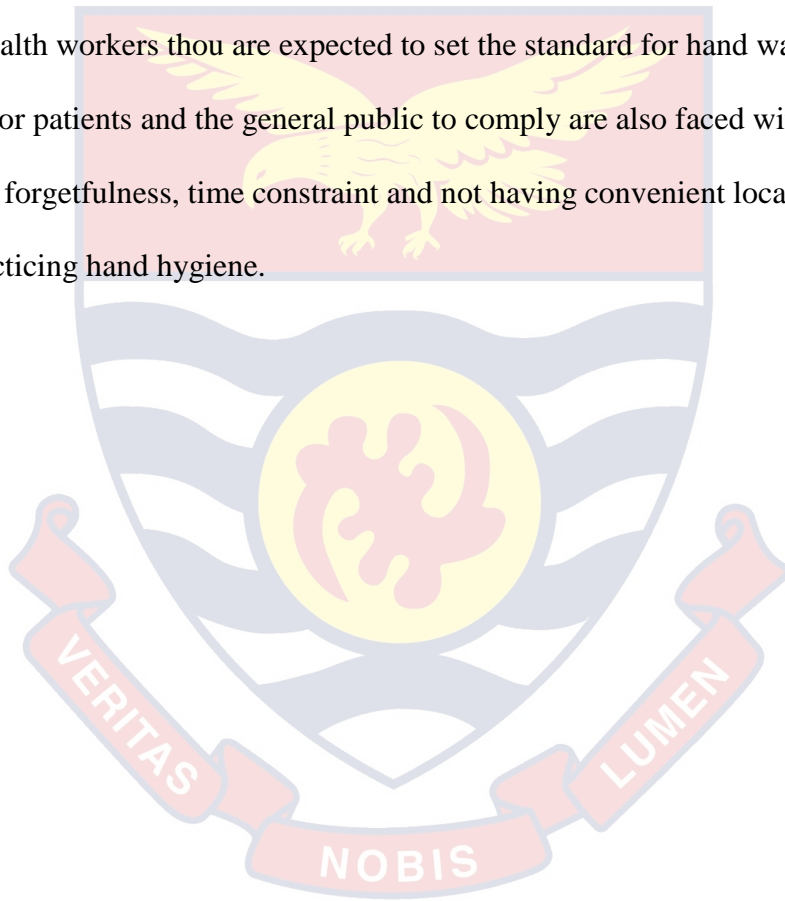
Conformance with hand hygiene is an effective preventive measure with respect to hospital infection control. Many of such infections are caused by pathogens transmitted from one patient to another by the hands of health care workers who have not washed their hands between patient care or who do not practice control measures such as use of hand disinfection with alcohol based preparation or glove use (Pittet, 2011; Voss & Widmer, 2010).

For objective 1, to examine the knowledge, attitudes and practices of hand washing among healthcare workers, the findings from the study showed that the practices, attitude and knowledge of health workers about hand washing is high and those with low knowledge was

attributed to their workload and nature of their work, where they are required to work under severe pressure, and often missing the opportunity to comply to hand hygiene.

For objective 2, to assess the availability of resources needed to practice hand hygiene, the findings from the study revealed that resources needed to ensure a safe hand hygiene practices was either inadequate or unavailable.

For objective 3, to identify the factors that contributes to hand washing compliance, the findings showed that health workers thou are expected to set the standard for hand washing as well as hand hygiene for patients and the general public to comply are also faced with a number of factors such as forgetfulness, time constraint and not having convenient location which prevents them from practicing hand hygiene.



CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter deals with the summary, conclusions and recommendations of the study. That's this chapter provides information on the summary of the findings of the project work, conclusion and also recommendations for further studies and policy making.

5.2 Summary

The study examined hand washing practices among healthcare workers at the Kaneshie Polyclinic of the Greater Accra region of Ghana. The study examined hand washing as a practice among healthcare workers at the Kaneshie Polyclinic of the Greater Accra region of Ghana. The study was a descriptive survey and the views of 100 respondents were sought through the administering of questionnaire. Primary and secondary sources of data collection method were used and data collected from the field was processed and analysed through the use of Statistical Product and Service Solutions (SPSS) version 16.0. It was revealed from the study that 56% of the respondents are females and all respondents have had education at various levels with tertiary education being the highest. Majority of the respondents considered for the study have stayed long within the health sector and therefore are quite experience. It was evident from the study that most of the respondents interviewed had more knowledge about hand hygiene. Amid Covid 19, respondents believe that wearing protective gloves and face mask is the most effective step of controlling any infections. With regards to the frequency of hand washing among health workers, 56% of the participants were of the opinion that the hands should be washed first thing in the morning while respondents were quite divided with regards to washing of hands with soap under

running water. 52% of the respondents believe that due to the unavailability of acceptable soap products they do not feel comfortable practicing hand washing. Also, it was observed that the health facility had quite a number of alcohol hand rubs which most of the times health workers use to rub off their hands especially after attending to patients at the health facility. Majority (88%) of the respondents due to the training and awareness they had from the polyclinic managers had knowledge about the WHO's guidelines on hand hygiene. However, 68% of the respondents believe that performing hand hygiene in the recommended way can reduce medical costs associated with hospitals acquired infections.

5.3 Conclusion

The study was undertaken to examine hand washing practices among healthcare workers at the Kaneshie Polyclinic. The conclusion drawn from the study is health workers have knowledge about hand hygiene and therefore are aware of infection prevention.

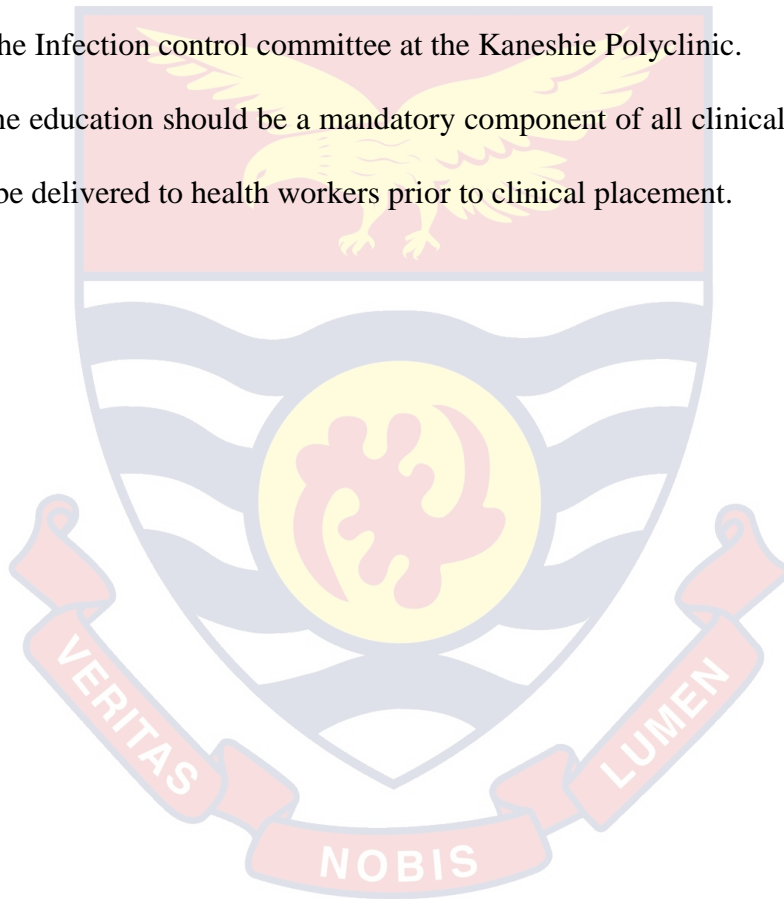
It can be concluded from the study that the compliance to the WHO guidelines regarding hand hygiene was higher among health workers than improving and providing facilities and resources for hand hygiene may play a very important role in increasing hand hygiene compliance among the Kaneshie Polyclinic staff and reduce cross transmission of infections among the patients as well as the general public.

5.4 Recommendations

Based on the key findings of the study, the following recommendations are made:

1. Polyclinic managers through the Ghana Health Service should provide health workers the needed resources required for strict compliance to the WHO's guidelines for hand hygiene.

2. Regular workshops and in-service training should be sustained to improve health care delivery practices with regards to hand hygiene. This should be done by polyclinic managers through the Ghana Health Service and the Ministry of Health.
3. Managers of the Kaneshie Polyclinic should frequently change hand hygiene posters to attract health workers attention. This will make health workers very conscious about hand washing.
4. Hand hygiene awareness can be improved to a great extent by conducting awareness programs frequently by the Infection control committee at the Kaneshie Polyclinic.
5. Hand hygiene education should be a mandatory component of all clinical course curricula and results should be delivered to health workers prior to clinical placement.



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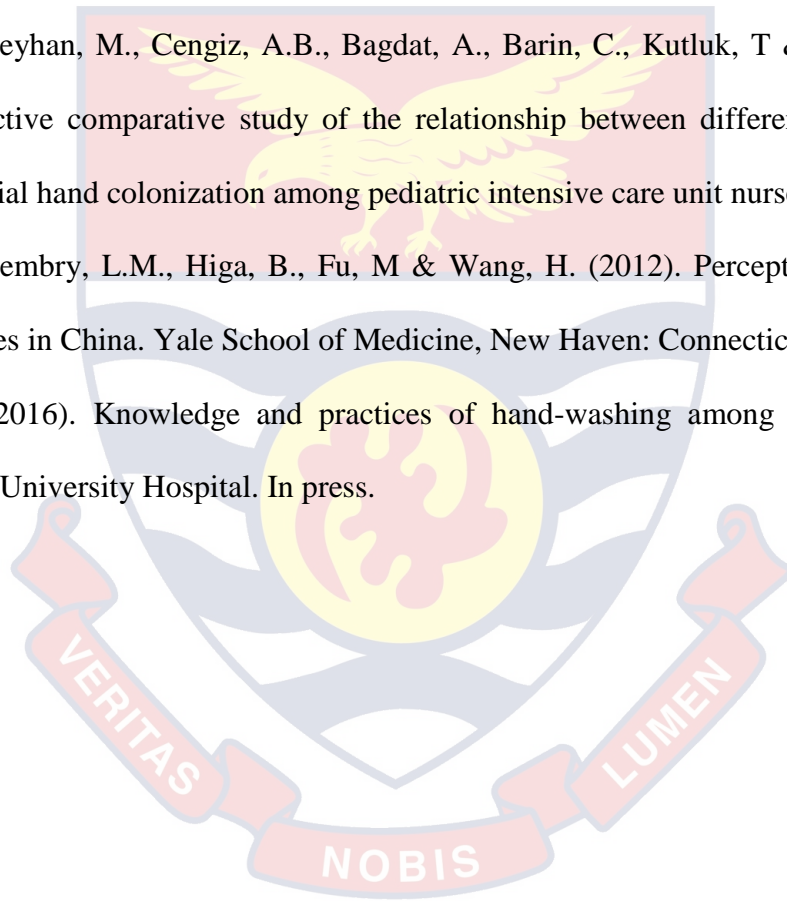
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APPENDIX

QUESTIONNAIRE

PRESBYTERIAN UNIVERSITY COLLEGE, GHANA

FACULTY OF DEVELOPMENT STUDIES

DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES

MANAGEMENT

I am a student of PUCG. I am carrying out a study on “hand washing practices among healthcare workers in health facilities: A case study of Kaneshie Polyclinic, Accra: I would be grateful if you could kindly provide me with answers to the following questions. The information provided would solely be used for academic purposes and your anonymity is assured. Thank you very much for agreeing to take part in this questionnaire.

This questionnaire is strictly for Academic purpose so be assured that your answers will be treated with strict confidentiality.

A. Bio-Data of Respondent

1. Gender a. Male () b. Female ()
2. Age of respondents. a. Less than 20 () b. 20-30 () c.31-40 () d. 41-50 () e. 51+()
3. Educational background a. None () b. Primary () c. MSCL/JHS () d. SHS/VOC () e. Tertiary ()
4. Religious background a. Christianity () b. Muslim () c. Traditionalist () d. Others ()
5. Marital Status: a. Married () b. Single () c. Divorced () d. Widowed () e. Separation ()

6. How long have you been working in this health facility? a. 0-5 years () b. 6-10 years ()
c. 11-15 years d. 16-20 years () e. 20 years plus ()

7. Job Description: a. Doctor () b. Administrator () c. Nurse () d. Health/Ward Asst ()
e. Orderly () f. Lab Tech/Asst () g. Waste Handlers () h. Other
(specify).....

8. Since you started working here, have you experienced any sicknesses resulting from poor
hand hygiene practice? a. Strongly agree () b. Agree () c. Disagree () d. Strongly
disagree ()

B. Knowledge and Attitude of Hand washing

9. What is the most effective step of infection control? a. Hand washing () b. Wearing
protective gloves () c. Wearing a face mask () d. Using hand sanitizer ()

10. What does PPE stand for? a. Primary Preparation Examination () b. Personal Protection
Equipment () c. Proper Protective Equipment () d. Preparation Premier Evaluation ()

11. What does “Standard Precautions” mean? a. Use protection only if needed () b. Use
caution when opening () c. Be careful when using this item () d. Every specimen should
be treated as though it is infectious ()

12. When should you wash your hands? a. When you return from lunch () b. First thing in the
morning () c. After every interaction () d. Before the next meeting ()

13a. Do you have any knowledge about hand hygiene? a. Yes () b. No ()
b. If yes, what are they.....

14. Do you wash your hands each time with soap under running water? a. Yes () b. No ()

15. It is the responsibility of every individual to ensure strict hygienic condition in the
Polyclinic? a. Strongly agree () b. Agree () c. Disagree () d. Strongly disagree ()

16. How do you feel when you attend to patients without washing your hand? a. Bad () b. A little bad () c. Very bad () d. Indifferent () e. Other (specify).....

C. Factors that contribute to Poor hand washing Practice

17. What prevents you from practicing Hand Hygiene? a. Too busy () b. Forget () c. Not in convenient location () d. Damages skin () e. Out of product () d. Always wear gloves ()

18. Which of the following should be avoided, as associated with increased likelihood of colonisation of hands with harmful germs?

a. Wearing jewellery () b. Damaged skin () c. Artificial fingernails () d. Regular use of a hand cream ()

19. When should you change your gloves? a. When gloves are torn () b. Between patients () c. When gloves are heavily soiled () d. All of the above ()

20. Are you aware/know the WHO compliance document on hand washing?

a. Yes () b. No () c. Not aware ()

D. Resources for Practising Hand Hygiene

21. Which of the following is not an infection exposure? a. A needle stick () b. A splash to your eyes c. A torn glove d. Patient secretions into mucous membranes

22. Which of these is the best disinfectant? a. Soap and water () b. 10% bleach solution () c. Alcohol () d. A damp cloth

23. Lack of an acceptable soap product can be a reason for not cleansing hands? a. Strongly agree () b. Agree () c. Disagree () d. Strongly disagree ()

24. Are Soap dispensers available and functional within the health facility? a. Yes () b. No () c. Not sure ()

25. Disposable Hand towel available and is accessible? a. Yes () b. No () c. Not sure ()
26. Hand hygiene posters demonstrating good hand washing techniques are available a. Yes ()
b. No () c. Not sure ()
27. Alcohol hand rubs available and functional? a. Yes () b. No () c. Not sure ()

E. Preventing Healthcare Associated Infections (HAI) by Health Workers

28. Performing hand hygiene in the recommended situations can reduce medical costs associated with hospital acquired infections a. Yes () b. No () c. Not sure ()
29. Prevention of hospital acquired infection is a valuable part of a health care worker's role a.
Yes () b. No () c. Not sure ()
30. I follow the example of senior health care workers when deciding whether or not to perform hand hygiene a. Yes () b. No () c. Not sure ()

